

Copyright and Creativity: Evidence from Italian Opera in the Napoleonic Age

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Motivation

Copyrights establish intellectual property rights

- ▶ Ranging from literature and science to images, films, and music

“The primary purpose of copyright law is to foster the creation and dissemination of intellectual works” (1961 U.S. Copyright Law Revision)

Little evidence on effects of copyrights

- ▶ No impact on music sales (Oberholzer-Gee and Strumpf, 2007)
- ▶ Raise in price in literature and science (Li et al., 2017; Biasi and Moser, 2020)
- ▶ Higher payments to authors (MacGarvie and Moser, 2014)

Open question

- ▶ What is the causal effect of copyrights on creation of new works?
- ▶ Lack of “exogenous” variation in modern copyrights laws
- ▶ Lack of data on quantity and quality of creative outputs

This Paper: Causal Effect of Copyrights on Creativity

Napoléon conquered all Italy between 1796 and 1812

- ▶ Lombardy and Venetia formed Cisalpine Republic, annexed to France
- ▶ In 1801 Cisalpine Republic adopted all French laws
- ▶ Including 1793 French copyright law (*life of authors + 10 years for heirs*)

In 1804 France passed *code civil*

- ▶ Codified system of civic laws, but no copyrights regulation
- ▶ *Code Civil* left copyrights intact where they already existed
- ▶ But did not introduce copyrights to states without them

Rest of Italy annexed starting in 1805

- ▶ Adopted *code civil with* with no copyrights
- ▶ Lombardy and Venetia maintained copyrights
- ▶ Rest of Italy did not introduce them

Data and Identification

Data: 2,598 newly-created operas

- ▶ Premiered across eight Italian states between 1770 and 1900
- ▶ Advantages: output easily observed, complete records for quantity/quality
- ▶ Not replicable with modern data

Measures of quality

- ▶ Historical popularity: notable operas in Loewenberg (1978)
- ▶ Operas performed at Met 1900-2014
- ▶ Long-run durability: available on Amazon today

Identification strategy

- ▶ Variation in timing of French annexation and copyright adoption
- ▶ Compare opera changes in Lombardy and Venetia to other states
- ▶ Same trend in operas and socio-economic outcomes before 1801

Preview of the Results

Increase in opera quantity/quality in Lombardy and Venetia after 1801

- ▶ + 2.2 additional operas per year → 157-percent increase
- ▶ 5-10 fold increase in high-quality operas
- ▶ Increase in share of high-quality operas

Composer-level results

- ▶ Doubled output in Lombardy and Venetia after 1801
- ▶ “Average” Italian composers produced more operas
- ▶ Return migrants made substantial contribution to high-quality operas

No additional effects with copyrights extensions

- ▶ Starting in 1826, other Italian states adopted copyright
- ▶ Starting in 1840, extension up to *life+30* and *life+40*
- ▶ Decline in opera output

Additional Results

Interactions between pre-existing demand and copyrights laws

- ▶ City-level data on theaters as proxy for operas demand
- ▶ Larger increase in operas in cities with two or more theaters
- ▶ Similar results for high-quality operas

Effects on librettos

- ▶ Text of operas with separate copyright
- ▶ +2.6 new librettos per year → 87-percent increase
- ▶ +53 p.p. increase in operas using new librettos

Effects on musical compositions

- ▶ Increase in broad range of compositions (operettas, oratorios, serenades)
- ▶ Increase in symphonies and songs
- ▶ Copyrights encouraged the creation of new music – beyond opera.

Contribution to the Literature

Copyright and access to content Mortimer (2007); MacGarvie and Moser (2014); Reimers (2019); Li et al. (2017); Biasi and Moser (2020)

Copyright, piracy and reuse of contents Oberholzer-Gee and Strumpf (2007); Danaher et al. (2010); Waldfogel (2012); Aguiar and Waldfogel (2014); Luo and Mortimer (2016); Cagé, Hervé, and Viaud (2017); Nagaraj (2018)

Copyright in the legal domain Heald (2008, 2009a); Buccafusco and Heald (2012)

Overview

- ▶ Institutional Details
- ▶ Data
- ▶ Empirical Strategy
- ▶ Main Results
 - ▶ Effects of copyrights on new operas
 - ▶ Effects of copyrights on quality of new operas
 - ▶ Composer-level results
 - ▶ Effects of copyright extensions
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The Creation of an Opera Before Copyrights

Theaters managed by professional agents (*impresarios*)

- ▶ Identify a promising story
- ▶ Procure a libretto
- ▶ Hire a composer to create the score in 4-8 weeks

Before copyrights

- ▶ Composers ONLY paid for the initial opera composition
- ▶ No additional payment for repeat performance
- ▶ Piracy was rampant

Any other theater could play an opera after premiere

- ▶ Impresarios would “. . . either steal an authentic score (as a rule by bribing a copyist) or pirate it” (Rosselli 1996, p. 74)
- ▶ Composers would hope to “recycle some of the music in another opera and another town” (Rosselli 1996, p. 74)

Lombardy and Venetia Adopted Copyright Laws in 1801

Lombardy and Venetia formed Cisalpine Republic in 1791

- ▶ In 1801 adoption of all French laws, including copyright law of 1793
- ▶ Covered life of authors and 10 years for heirs (*life + 10*)
- ▶ Mutually enforceable in Lombardy and Venetia ▶ Enforcement

In 1804 France passed *code civil*

- ▶ Codified system of civic laws, but no copyrights regulation
- ▶ Lombardy and Venetia maintained copyrights
- ▶ Rest of Italy, annexed from 1805, did not introduce them

With copyrights, composers paid for EACH repeat performance

- ▶ Starting from premiere season
- ▶ Improvements in composers' pay after 1801
- ▶ More bargaining power with impresarios

Other States Adopted Copyright after 1826

Papal State in 1826

- ▶ From *no copyright* to *life +12*

Two Sicilies in 1828

- ▶ From *no copyright* to *life +30*

Bilateral Treaty with Austria in 1840

- ▶ Lombardy and Venetia/Papal State: from *life +10* to *life +30*
- ▶ Other states but Sicily: from *no copyright* to *life +30*

Italy Unification in 1861

- ▶ From *life +30* to *life +40* (in 1865)

Map of Italy with Vienna Congress Borders (1815)



Impresarios, Publishers and Librettists

Impresarios

- ▶ Before copyrights: Intense competition from other theaters
- ▶ With copyrights: right to forbid unauthorized repeat performances
- ▶ Larger share extraction of consumer surplus, in part passed to composers

Publishers

- ▶ Often worked closely with composers
- ▶ Composers could sell them their rights to maximize returns
- ▶ Able to make three-way agreements with composers and impresarios

Librettists

- ▶ Before copyrights: lump-sum payment for composition
- ▶ With copyrights: additional income from sales of physical copies
- ▶ Since 1830s, composers chose their own librettists

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Data Collection: Operas Premiered in Italy, 1770-1900

2,598 new operas by 705 composers in 8 states, 1770-1900

- ▶ 1770: first year of bel canto in 1770 (Rossini, Bellini, Donizetti)
- ▶ 1900: final year of the Italian Verismo (Puccini)
- ▶ Including 478 new operas by 64 composers, 1781-1820

1,718 new operas from three sources

- ▶ *Annals of Opera* (Loewenberg, 1978) → 294 premieres
- ▶ *Opere e Operisti* (Dassori, 1903) → 1,353 premieres
- ▶ *Operisti Minori dell'Ottocento Italiano* (Ambiveri, 1998) → 71 premieres

Cross check with *New Grove Dictionary of Music and Musicians*

- ▶ Check 89 composers whose last name begins with letter B, 46 composers whose last name begins with D
- ▶ Our data include 80 additional composers, without missing any composer
- ▶ 880 additional works by the same 705 composers

Measures for Operas Popularity and Durability

Historically popular operas: Loewenberg's (1978) *Annals of Operas*

- ▶ "It is a magnificent piece of work, and belongs on the bookshelf of every researcher in the operatic field" (Opera Today January 24, 2005)
- ▶ 254 new operas 1770-1900; 62 new operas 1781-1820

Operas in 20th century: performed at NY Metropolitan opera house

- ▶ At least once between 1900 and 2014
- ▶ 349 new operas 1770-1900; 55 new operas 1781-1820

Durable operas: Available for sale on Amazon in 2014

- ▶ Example:
 - ▶ Verdi's *La Traviata* → Complete 2008 recording by Arthaus Musik and 2012 Virgin Classics
 - ▶ Cimarosa's *Penelope* → no results
- ▶ 155 new operas 1770-1900; 42 new operas 1780-1821

Summary Statistics: 1781-1820

	Lombardy and Venetia	Other States	Lombardy and Venetia	Other States
	<u>All operas (N=677)</u>		<u>Met Operas (N=55)</u>	
1781-1820	3.063	1.717	0.363	0.108
1781-1800	1.575	1.350	0.100	0.067
1801-1820	4.550	2.083	0.625	0.150
	<u>Historically popular operas (N=62)</u>		<u>Durable operas (N=42)</u>	
1781-1820	0.363	0.121	0.225	0.088
1781-1800	0.125	0.083	0.025	0.025
1801-1820	0.600	0.158	0.425	0.150

Notes: Lombardy & Venetia (L&V) adopted copyright laws in 1801. *Historically popular operas* include 62 operas in Loewenberg's (1978) *Annals of Opera*; *Met operas* include 55 operas that were performed at the NY Metropolitan at least once between 1900 and 2014; *Durable operas* include 42 operas available for sale on Amazon in March 2014.

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Research Design

Due to timing of Napoleon wars, *only Lombardy and Venetia got copyrights*

- ▶ 1793: France adopts copyrights for life of author + 10 years
- ▶ April 11, 1796: Napoleon invades Sardinia at Ceva
- ▶ May 14, 1797: Napoleon defeats Austria and conquers Verona and Venice
- ▶ June 29, 1797: Creation of the Cisalpine Republic
- ▶ June 20, 1800: Napoleon conquers Venetia in 1800
- ▶ **May 9, 1801: French Copyright Law extended to Lombardy and Venetia**
- ▶ **March 21, 1804: Adoption of the (Napoleonic) code civil in France**
- ▶ 1804: Napoleon controls Sardinia, adoption of code civil w/o copyrights
- ▶ 1805: Parma, adoption of code civil w/o copyrights
- ▶ 1809: Tuscany, adoption of code civil w/o copyrights
- ▶ 1812: Naples and Papal States, adoption of code civil w/o copyrights

Empirical Specification: DID Estimation

Comparison between Lombardy and Venetia and other Italian States before/after 1801

$$\text{operas}_{it} = \beta(\text{Lombardy and Venetia}_i \cdot \text{Post 1801}_t) + \lambda_i + \nu_t + \epsilon_{it}$$

- ▶ Operas: operas premiered in state i in year t between 1781 and 1820
- ▶ Lombardy and Venetia: indicator for Lombardy and Venetia
- ▶ Post 1801: indicator for post copyright years
- ▶ λ_i : state fixed effects
- ▶ ν_t : year fixed effect

Identification Assumptions

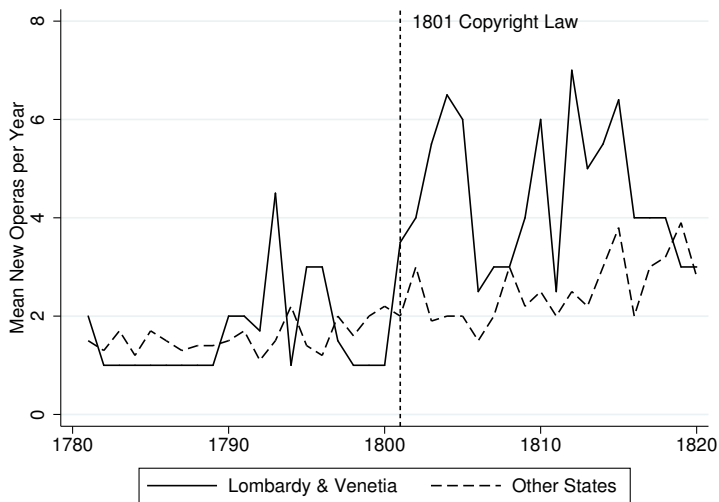
Operas production

- ▶ In Lombardy and Venetia and rest of Italy on the same trend
- ▶ Without copyright adoption

Supporting empirical evidence

1. Pre-trend in operas between 1781-1800
2. Economic performance of states in 1800
3. Comparison of demand for new operas 1781-1800
4. No migration from other states to L&V

1) Similar Trend in Operas per State and Year, 1781-1800



Notes. *Lombardy & Venetia* adopted copyright laws in 1801, after they had fallen under Napoleonic rule. *Other States* include Sardinia, Modena and Reggio, Parma and Piacenza, Tuscany, Papal States and Sicily.

2) No Differences in 1800 Population, Urbanization, GDP

	Lombardy and Venetia	Other States	Difference
Population (in millions)	3.18	2.98	0.199 (0.101)
Cities > 5,000 people	15.50	15.80	-0.500 (0.972)
Urbanization rate	17.50	16.90	0.599 (0.932)
GDP per capita (k)	1,450	1,386	64.000 (50.903)

Notes. Lombardy & Venetia adopted copyright laws in 1801, after they had fallen under Napoleonic rule. Other States include Sardinia, Modena and Reggio, Parma and Piacenza, Tuscany, Papal States and Sicily.

3) No Differences in Demand for Operas, 1781-1800

	Lombardy and Venetia	Other States	Difference
Theaters	4.76	5.50	-0.833 (2.941)
Theater seats	4,710.00	3,711.00	999.00 (2,240.918)
Composers	1.00	1.17	-0.167 (0.304)
Librettos	4.50	3.83	0.667 (3.355)
Librettists	4.00	3.50	0.500 (2.972)
Theaters/city	1.22	0.88	0.347 (0.382)
Theater seats/city	1,046.67	695.81	350.854 (432.890)

Notes. Lombardy & Venetia adopted copyright laws in 1801, after they had fallen under Napoleonic rule. Other States include Sardinia, Modena and Reggio, Parma and Piacenza, Tuscany, Papal States and Sicily.

4) No Composers Moving to L&V, 1781-1800

	Composed in							
	Sard.	Mod.	Parma	Tusc.	Lomb.	Ven.	Rome	Sic.
Composing in								
Sardinia (0)	—	—	—	—	—	—	—	—
Modena (0)	—	—	—	—	—	—	—	—
Parma (0)	—	—	—	—	—	—	—	—
Tuscany (0)	—	—	—	—	—	—	—	—
Lombardy (16)	—	—	—	—	—	—	—	—
Venetia (10)	—	—	—	—	—	—	—	—
Rome (2)	—	—	—	—	—	—	—	1
Sicily (3)	1	—	—	—	—	—	—	—

Notes. This table checks whether the increase in opera creation in Lombardy and Venetia after 1800 may have been driven by outmigration from the control group of other Italian states. It counts composers who had previously composed at least one opera in one of the column states of origin with at least one opera in one of the row destination states.

4) No Composers Moving to L&V, 1801-1820

Composing in	Composed in							
	Sard.	Mod.	Parma	Tusc.	Lomb.	Ven.	Rome	Sic.
Sardinia (3)	—	—	—	1	—	—	—	1
Modena (0)	—	—	—	—	—	—	—	—
Parma (0)	—	—	—	—	—	—	—	—
Tuscany (4)	1	—	—	—	—	—	1	1
Lombardy (44)	—	—	—	—	—	—	—	—
Venetia (34)	—	—	—	—	—	—	—	—
Rome (5)	1	—	—	2	—	—	—	1
Sicily (9)	2	1	1	1	—	—	—	—

Notes. This table checks whether the increase in opera creation in Lombardy and Venetia after 1800 may have been driven by outmigration from the control group of other Italian states. It counts composers who had previously composed at least one opera in one of the column states of origin with at least one opera in one of the row destination states.

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+2.2 New Operas in Lombardy and Venetia After 1801

	OLS			Poisson	
L&V · post 1801	2.201 (0.404)	2.147 (0.422)	2.263 (0.472)	2.430 (0.470)	1.287 (0.313)
Lombardy & Venetia		0.320 (0.238)			
State FE	Yes	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Pre-trend for L&V	No	No	Yes	No	No
State-specific pre-trend	No	No	No	Yes	No
Pre-1801 mean	1.41	1.41	1.41	1.41	1.41
N (year-state pairs)	320	320	320	320	320
R-squared	0.800	0.726	0.800	0.819	

Notes. The dependent variable *new operas* is the number of new operas in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

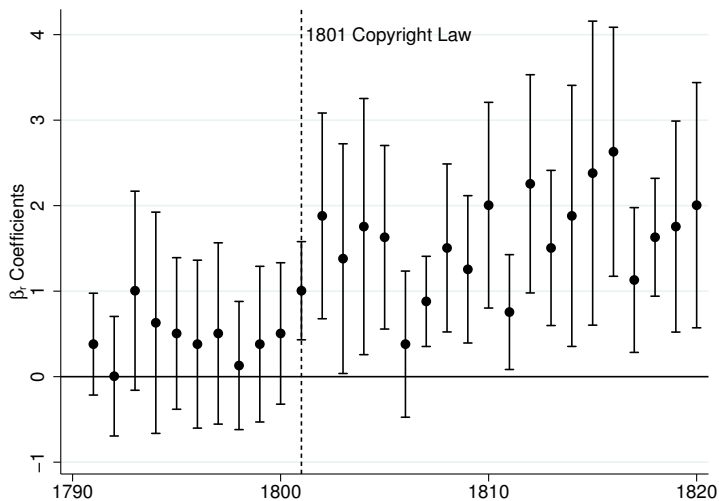
Timing of the Effects

Estimate coefficient β separately for each year:

$$\text{operas}_{it} = \sum_{r=1790}^{1820} \beta_r (\text{Lombardy and Venetia}_i \cdot \text{Year}_r) + \lambda_i + \nu_t + \epsilon_{it}$$

- ▶ Operas: new operas performed in state i in year t between 1781 and 1820
- ▶ Lombardy and Venetia: indicator for Lombardy and Venetia
- ▶ Year: indicator for each year, 1790-1820
- ▶ λ_i : state fixed effects
- ▶ ν_t : year fixed effect

Increased in Operas Started After 1801



Notes. 95% confidence intervals for β 's coefficients in the OLS regression. The variable year indicates years between 1791 and 1820; years between 1781 and 1790 are the excluded period.

Robustness Checks

- ▶ De-trending the dependent variable [▶ Results](#)
- ▶ Excluding Milan, Venice or both [▶ Results](#)
- ▶ Controlling for years since French occupation [▶ Results](#)
- ▶ Synthetic control for Lombardy and Venetia [▶ Results](#)

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Did Copyright Increase Quality of Operas?

Rights to charge theaters for repeat performances

- ▶ So-called performance rights established by the 1801 Law
- ▶ Increased expected revenue for composers from more popular or durable operas

Intrinsic preference for high quality works

- ▶ Additional revenue from copyrights relaxed budget constraint enough to allow to substitute quality for quantity
- ▶ Verdi earned substantial income from score sales and performance fees, no longer needed to be a “galley slave” (Scherer, 2001)

5.3-fold Increase in Historically Popular Operas

	Number		Share	
Lombardy & Venetia · post1801	0.407	0.401	0.104	0.101
	(0.152)	(0.153)	(0.047)	(0.047)
Lombardy & Venetia		0.041		-0.015
		(0.067)		(0.035)
Pre-1801 Mean	0.094	0.094	0.055	0.055
State FE	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
N (year-state pairs)	320	320	320	320

Notes. The dependent variable *new operas* is the number of new historically-popular operas in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

2.9-fold Increase in Historically Popular Share

	Number		Share	
Lombardy & Venetia · post1801	0.407 (0.152)	0.401 (0.153)	0.104 (0.047)	0.101 (0.047)
Lombardy & Venetia		0.041 (0.067)		-0.015 (0.035)
Pre-1801 Mean	0.094	0.094	0.055	0.055
State FE	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
N (year-state pairs)	320	320	320	320

Notes. The dependent variable *share new operas* is the share of new historically-popular operas in state i and year t between 1781 and 1820. *Lombardy & Venetia* equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

7.0-fold Increase in Met Operas

	Number		Share	
Lombardy & Venetia · post1801	0.448 (0.144)	0.442 (0.145)	0.102 (0.044)	0.099 (0.044)
Lombardy & Venetia		0.033 (0.052)		-0.004 (0.031)
Pre-1801 Mean	0.075	0.075	0.041	0.041
State FE	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
N (year-state pairs)	320	320	320	320

Notes. The dependent variable *new operas* is the number of new Met operas in state *i* and year *t* between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

10.2-fold Increase in Share of Met Operas

	Number		Share	
Lombardy & Venetia · post1801	0.448 (0.144)	0.442 (0.145)	0.102 (0.044)	0.099 (0.044)
Lombardy & Venetia		0.033 (0.052)		-0.004 (0.031)
Pre-1801 Mean	0.075	0.075	0.041	0.041
State FE	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
N (year-state pairs)	320	320	320	320

Notes. The dependent variable *share new operas* is the share of new Met operas in state *i* and year *t* between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

11.2-fold Increase in Durable Operas

	Number		Share	
Lombardy & Venetia · post1801	0.280 (0.129)	0.275 (0.130)	0.069 (0.033)	0.067 (0.033)
Lombardy & Venetia		-0.000 (0.067) (0.028)		-0.014 (0.035) (0.014)
Pre-1801 Mean	0.025	0.025	0.016	0.016
State FE	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N (year-state pairs)	320	320	320	320

Notes. The dependent variable *new operas* is the number of new Amazon operas in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

4.3-fold Increase in Durable Operas Share

	Number		Share	
Lombardy & Venetia · post1801	0.280 (0.129)	0.275 (0.130)	0.069 (0.033)	0.067 (0.033)
Lombardy & Venetia		-0.000 (0.067) (0.028)		-0.014 (0.035) (0.014)
Pre-1801 Mean	0.025	0.025	0.016	0.016
State FE	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N (year-state pairs)	320	320	320	320

Notes. The dependent variable *share new operas* is the share of new Amazon operas in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

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Composer-Level Analysis

$$\text{operas}_{cit} = \beta(\text{Lombardy and Venetia}_i \cdot \text{Post 1801}_t) + \mu_c + \lambda_i + \nu_t + \epsilon_{it}$$

- ▶ Operas: operas by composer c in state i in year t between 1781 and 1820
- ▶ Lombardy and Venetia: indicator for Lombardy and Venetia
- ▶ Post 1801: indicator for post copyright years
- ▶ μ_c : composer fixed effects
- ▶ λ_i : state fixed effects
- ▶ ν_t : year fixed effect

Composers in L&V Doubled Output after 1801

	All	Historically Popular		Met		Durable	
	Count	Count	Share	Count	Share	Count	Share
L&V ·	1.451	0.838	0.276	0.653	0.233	0.563	0.192
post 1801	(0.411)	(0.204)	(0.074)	(0.196)	(0.074)	(0.235)	(0.069)
<i>Excluding 10% of most prolific composers</i>							
L&V ·	1.703	0.793	0.201	0.596	0.144	0.429	0.145
post 1801	(0.496)	(0.240)	(0.072)	(0.218)	(0.073)	(0.169)	(0.090)
<i>Excluding 20% of most prolific composers</i>							
L&V ·	1.317	0.399	0.132	0.278	0.066	0.387	0.181
post 1801	(0.757)	(0.285)	(0.131)	(0.273)	(0.119)	(0.241)	(0.109)
Pre mean	1.194	0.056	0.048	0.046	0.037	0.048	0.031

Notes. The dependent variable *new operas per composer per state and year* is the number of new operas by composer c in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

Composers in L&V Created More High-Quality Operas

	All	Historically Popular		Met		Durable	
	Count	Count	Share	Count	Share	Count	Share
L&V · post 1801	1.451 (0.411)	0.838 (0.204)	0.276 (0.074)	0.653 (0.196)	0.233 (0.074)	0.563 (0.235)	0.192 (0.069)
<i>Excluding 10% of most prolific composers</i>							
L&V · post 1801	1.703 (0.496)	0.793 (0.240)	0.201 (0.072)	0.596 (0.218)	0.144 (0.073)	0.429 (0.169)	0.145 (0.090)
<i>Excluding 20% of most prolific composers</i>							
L&V · post 1801	1.317 (0.757)	0.399 (0.285)	0.132 (0.131)	0.278 (0.273)	0.066 (0.119)	0.387 (0.241)	0.181 (0.109)
Pre mean	1.194	0.056	0.048	0.046	0.037	0.048	0.031

Notes. The dependent variable *new operas per composer per state and year* is the number of new operas by composer c in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

Composers in L&V Created More despite Return Migrants

	All Operas			
	OLS		Poisson	
L&V · post 1801	1.110 (0.351)	1.451 (0.324)	0.726 (0.176)	0.811 (0.159)
Return Migrants · L&V · post 1801	0.846 (0.353)		0.181 (0.175)	
Stayers · L&V · post 1801		-1.951 (1,480)		-1.284 (0.321)
Pre-1801 mean	1.194	1.194	1.194	1.194
Composer FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Notes. The dependent variable *new operas per composer per state and year* is the number of new operas by composer c in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

Negative Effects on Stayers

	All Operas			
	OLS		Poisson	
L&V · post 1801	1.110 (0.351)	1.451 (0.324)	0.726 (0.176)	0.811 (0.159)
Return Migrants · L&V · post 1801	0.846 (0.353)		0.181 (0.175)	
Stayers · L&V · post 1801		-1.951 (1,480)		-1.284 (0.321)
Pre-1801 mean	1.194	1.194	1.194	1.194
Composer FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Notes. The dependent variable *new operas per composer per state and year* is the number of new operas by composer c in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

Return Migrants Contributed More to High-Quality Operas

	Historically-popular		Met		Durable	
	Count	Share	Count	Share	Count	Share
L&V · post 1801	0.612 (0.203)	0.246 (0.075)	0.447 (0.170)	0.198 (0.074)	0.443 (0.189)	0.195 (0.071)
Return Migrants · L&V · post 1801	0.560 (0.305)	0.076 (0.075)	0.511 (0.171)	0.063 (0.074)	0.294 (0.190)	-0.008 (0.071)
Composer FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes. The dependent variable *new operas per composer per state and year* is the number of new operas by composer c in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

Negative Effects on Stayers' High-Quality Operas

	Historically-popular		Met		Durable	
	Count	Share	Count	Share	Count	Share
L&V · post 1801	0.838	0.277	0.653	0.223	0.562	0.193
	(0.17)	(0.068)	(0.157)	(0.067)	(0.172)	(0.065)
Stayers ·	-0.898	-0.220	-0.167	-0.092	-0.863	-0.324
L&V · post 1801	(0.859)	(0.313)	(0.720)	(0.307)	(0.790)	(0.297)
Composer FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes. The dependent variable *new operas per composer per state and year* is the number of new operas by composer c in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

Overview

- ▶ Institutional Details
- ▶ Data
- ▶ Empirical Strategy
- ▶ **Main Results**
 - ▶ Effects of copyrights on new operas
 - ▶ Effects of copyrights on quality of new operas
 - ▶ Composer-level results
 - ▶ **Effects of copyright extensions**
- ▶ Interaction with pre-existing demand
- ▶ Effects on other musical compositions
- ▶ Conclusions

Other States Adopted Copyrights After L&V

Papal State in 1826

- ▶ From *no copyright* to *life +12*

Two Sicilies in 1828

- ▶ From *no copyright* to *life +30*

Bilateral Treaty with Austria in 1840

- ▶ Lombardy and Venetia/Papal State: from *life +10* to *life +30*
- ▶ Other states but Sicily: from *no copyright* to *life +30*

Italy Unification in 1861

- ▶ From *life +30* to *life +40* (in 1865)

Effects of Copyright Adoption, 1826-1840

$$\text{operas}_{it} = \beta(\text{Copyright}_{it}) + \phi_i + \delta_t + \epsilon_{it}$$

- ▶ Operas: operas in state i in year t
- ▶ Copyright: indicator for state i offering copyrights in year t
- ▶ ϕ_i : state fixed effects
- ▶ δ_t : year fixed effect

Introduction of Copyright Increased Operas Production

	All Operas		Popular	Met	Durable
	OLS	Poisson	OLS	OLS	OLS
Copyright	2.579 (0.438)	0.571 (0.092)	0.188 (0.098)	0.396 (0.113)	0.327 (0.111)
State FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Pre-1801 mean	1.474	1.474	0.123	0.1235	0.105
N (year-state pair)	1,048	1,048	1,048	1,048	1,048
R-squared	0.709		0.370	0.353	0.350

Notes. The dependent variable *new operas per state and year* is the number of new operas in state i and year t . *Copyright* equals 1 if state i offered copyrights in year t .

Effects of Copyright Extensions

$$\text{operas}_{it} = \beta_1 \text{Adopt}_{it} + \beta_2 \text{Extend } 30_{it} + \beta_3 \text{Extend } 40_{it} + \epsilon_{it}$$

- ▶ Operas: new operas performed in state i in year t between 1781 and 1820
- ▶ Adopt: indicator for introducing copyright before $life+30$
- ▶ Extend 30: indicator for extending copyright to $life+30$
- ▶ Extend 40: indicator for extending copyright to $life+40$

Extensions in Copyrights Associated with Operas Decline

	All Operas		Popular	Met	Durable
	OLS	Poisson	OLS	OLS	OLS
Adopt	3.259 (0.246)	2.789 (0.230)	0.466 (0.064)	0.474 (0.071)	0.405 (0.070)
Extend to <i>life+30</i>	1.138 (0.233)	0.707 (0.271)	-0.125 (0.077)	-0.227 (0.084)	-0.168 (0.083)
Extend to <i>life+40</i>	-0.467 (0.296)	-0.366 (0.225)	-0.189 (0.073)	-0.393 (0.072)	-0.352 (0.071)
State FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Pre-1801 mean	1.474	1.474	0.123	0.1235	0.105
N (year-state pair)	1,048	1,048	1,048	1,048	1,048
R-squared	0.414		0.179	0.127	0.105

Notes. The dependent variable *new operas per state and year* is the number of new operas in state *i* and year *t*. *Adopt* equals 1 if state *i* introduced copyright before *life+30*; *Extend 30/40* equals 1 if state *i* extended copyright to *life+30/40*.

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Interactions between Copyright and Demand

What happened within states that adopted copyrights?

- ▶ Example: Lombardy
 - ▶ Milan: 124,000 inhabitants in 1800 (Malanima, 2015)
 - ▶ Brescia: 38,000; Bergamo: 36,000; Mantua: 25,000

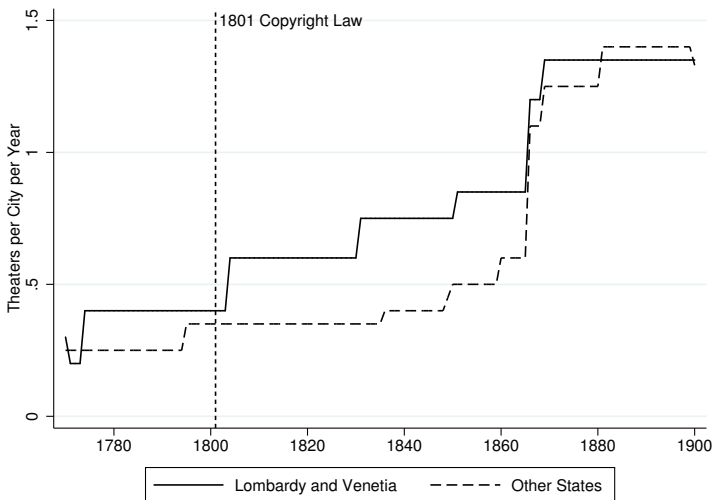
City-size in turn correlated with

- ▶ Skilled performers and demand for show
- ▶ → higher payoff for creating more and better music
- ▶ → amplification of adopting copyright effects

Proxy city-level variation in demand

- ▶ Number of theaters and theater seats
- ▶ Number of theaters comparable in L&V and other states
- ▶ No major increase in number of theaters until Unification (1861)

Number of Theaters in Italy, 1770-1900



Notes. Average number of theaters that performed at least one opera per city per year in Lombardy and Venetia and other Italian states between 1770 and 1900.

Larger Effects in Cities with Higher Number of Theaters

	All Operas		Historically-popular		Met		Durable	
	One	>One	One	>One	One	>One	One	>One
L&V · post	0.269 (0.062)	1.893 (0.294)	0.071 (0.026)	0.962 (0.140)	0.080 (0.024)	0.449 (0.102)	0.064 (0.024)	0.681 (0.122)
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean	0.215	1.036	0.018	0.079	0.015	0.057	0.012	0.057
N	680	280	680	280	680	280	680	280

Notes. The dependent variable *new operas per city and year* is the number of new operas in city i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post* equals 1 for years after 1800. [▶ Theater Seats](#)

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Effects on Librettos and Other Musical Compositions

Librettos: text that complement opera score

- ▶ Subject to *separate* copyrights
- ▶ Sales of physical copies important source of revenues

Opening Night! Operas and Oratorio Premieres from Stanford University

- ▶ Broader definition of operas: operettas, oratorios, serenades
- ▶ 5,949 premieres in Italy between 1770 and 1900

International Music Score Library Project (IMSLP)

- ▶ Symphonies and songs
- ▶ 2,398 symphonies and 5,600 songs in Italy between 1770 and 1900

In Lombardy and Venetia More Librettos after 1801

	New Librettos		Share Operas from New Librettos	
	OLS	Poisson	OLS	Poisson
Lombardy & Venetia · post 1801	2.604 (0.404)	2.145 (0.365)	0.533 (0.065)	0.410 (0.082)
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Pre-1801 mean	2.950	2.950	0.165	0.165
N (year-state pairs)	320	320	320	320
R-squared	0.800		0.702	

Notes. The dependent variables *new librettos* and *share of operas from new librettos* per state and year is the number of new librettos and share of operas using a new libretto in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

In L&V More Operas from New Librettos after 1801

	New Librettos		Share Operas from New Librettos	
	OLS	Poisson	OLS	Poisson
Lombardy & Venetia · post 1801	2.604 (0.404)	2.145 (0.365)	0.533 (0.065)	0.410 (0.082)
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Pre-1801 mean	2.950	2.950	0.165	0.165
N (year-state pairs)	320	320	320	320
R-squared	0.800		0.702	

Notes. The dependent variables *new librettos* and *share of operas from new librettos* per state and year is the number of new librettos and share of operas using a new libretto in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

In L&V More Musical Compositions after 1801

	<i>Opening Night!</i>		Symphonies		Songs	
	OLS	Poisson	OLS	Poisson	OLS	Poisson
L&V · post 1801	2.111 (0.453)	1.773 (0.340)	3.399 (0.375)	1.868 (0.123)	5.882 (1.163)	4.994 (0.901)
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre-1801 mean	2.910	2.910	0.838	0.838	6.925	6.925
N (year-state pairs)	320	320	320	320	320	320
R-squared	0.800		0.702		0.849	

Notes. The dependent variables *Opening Night!*, *symphonies*, and *songs per state and year* are the number of new operettas, oratorios, and serenades (excluding operas), symphonies, and songs in state i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800.

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Conclusions and Discussion

Adoption of copyrights encourages creativity

- ▶ Increase in operas quantity and quality
- ▶ Increase in composer productivity
- ▶ No benefits from copyright extensions *beyond* composer life
- ▶ Results generalized to broader set of musical compositions

Tradeoff between the positive and negative effects of copyrights

- ▶ Increase in composers' income
- ▶ Increase in costs for consumers and later generations of authors
- ▶ Long-term tradeoffs for future research

Back-Up Slides

Evidence on Copyrights Enforcement, 1781-1800

	Premiered in							
	Sard.	Mod.	Parma	Tusc.	Lomb.	Ven.	Rome	Sic.
Performed in								
Sardinia	0	0	0	0	0	0	0	0
Modena	0	0	0	0	0	0	0	0
Parma	4	0	0	0	2	3	0	5
Tuscany	0	0	0	1	0	2	2	4
Lombardy	0	0	0	0	0	0	0	0
Venetia	3	1	4	6	7	3	1	10
Rome	1	0	0	3	0	5	4	8
Sicily	6	7	0	4	0	2	5	11

Notes. Counts of repeat performances (in column states) of operas that had premiered in row states. Red area represent repeat performances of operas that would have been protected by copyrights after 1801. Copyrights were only valid in states with copyrights and not enforceable in other states.

Evidence on Copyrights Enforcement, 1801-1820

Performed in	Premiered in							
	Sard.	Mod.	Parma	Tusc.	Lomb.	Ven.	Rome	Sic.
Sardinia	2	1	0	4	0	0	2	4
Modena	0	0	0	0	0	0	0	0
Parma	0	0	0	0	0	0	0	0
Tuscany	0	0	0	0	0	0	0	0
Lombardy	0	0	0	1	0	0	2	1
Venetia	2	0	0	1	0	0	0	1
Rome	3	0	4	0	0	0	0	3
Sicily	2	0	5	0	0	0	2	4

Notes. Counts of repeat performances (in column states) of operas that had premiered in row states. Red area represent repeat performances of operas that would have been protected by copyrights after 1801. Copyrights were only valid in states with copyrights and not enforceable in other states. [← Back](#)

De-trending the Dependent Variable

	OLS			
L&V · post 1801	2.201 (0.378)	2.147 (0.399)	2.263 (0.459)	2.430 (0.450)
Lombardy & Venetia		0.320 (0.194)		
State FE	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Pre-trend for L&V	No	No	Yes	No
State-specific pre-trend	No	No	No	Yes
Pre-1801 mean	1.41	1.41	1.41	1.41
N (year-state pairs)	320	320	320	320

Notes. The dependent variable new operas per state and year counts new operas created in city i and year t between 1781 and 1820 and is de-trended by a linear pre-trend for Lombardy and Venetia, estimated for the pre-1801 data. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post1801* equals 1 for years after 1800. [← Back](#)

Excluding Milan and Venice

	OLS			
L&V · post 1801	2.078 (0.313)	1.048 (0.358)	1.596 (0.277)	3.336 (0.373)
State FE	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Excluding Venice	No	No	Yes	No
Excluding Milan	No	No	No	Yes
Excluding Venice and Milan	1.19	1.36	1.15	1.31
Excluding Venetia	320	320	320	320

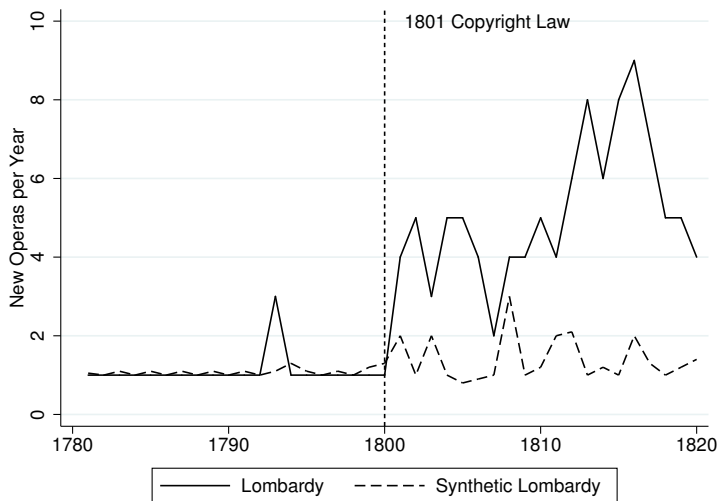
Notes. The dependent variable new operas per state and year measures the number of new operas in state i and year t between 1781 and 1820. The indicator variable Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. The indicator variable post equals 1 for years after 1800. [◀ Back](#)

Controlling for Years of French Domination

	OLS (1-4)				Poisson
L&V post 1801	2.242 (0.403)	2.338 (0.406)	2.430 (0.439)	2.430 (0.470)	1.287 (0.313)
Lombardy & Venetia		0.829 (0.241)			
State FE	Yes	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Pre-trend for L&V	No	No	Yes	No	No
State-specific pre-trend	No	No	No	Yes	No
Pre-1801 mean	1.41	1.41	1.41	1.41	1.41
N (year-state pairs)	320	320	320	320	320

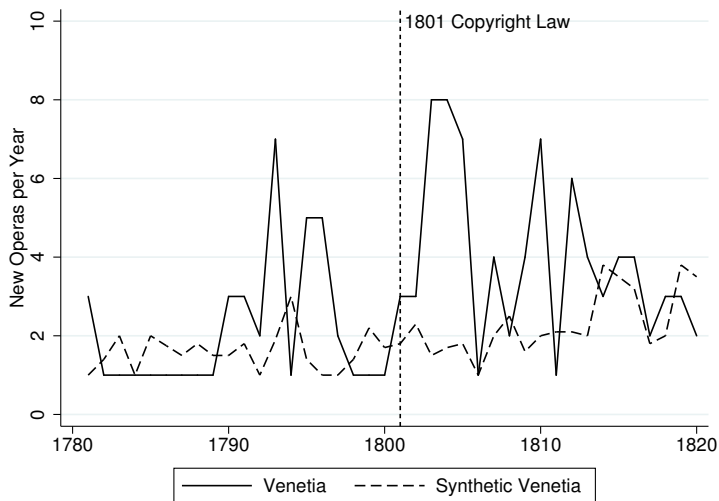
Notes. The dependent variable new operas per state and year measures the number of new operas in state i and year t between 1781 and 1820. The indicator variable Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. The indicator variable post equals 1 for years after 1800. [◀ Back](#)

Synthetic Control for Lombardy



Notes. The solid line plots the observed number of operas in Lombardy. The dashed line plots operas for a synthetic Lombardy without copyrights (Abadie et al., 2012). [← Back](#)

Synthetic Control for Venetia



Notes. The solid line plots the observed number of operas in Venetia. The dashed line plots operas for a synthetic Venetia without copyrights (Abadie et al., 2012). [← Back](#)

Larger Effects in Cities with More Theater Seats

	All Operas		Historically-popular		Met		Durable	
	<1,000	>1,000	<1,000	>1,000	<1,000	>1,000	<1,000	>1,000
L&V · post	0.256 (0.069)	1.271 (0.228)	0.084 (0.029)	0.635 (0.111)	0.088 (0.027)	0.305 (0.073)	0.070 (0.027)	0.455 (0.090)
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean	0.215	1.036	0.018	0.079	0.015	0.057	0.012	0.057
N	560	400	560	400	560	400	560	400

Notes. The dependent variable *new operas per city and year* is the number of new operas in city i and year t between 1781 and 1820. Lombardy & Venetia equals 1 for Lombardy and Venetia, which adopted copyright laws in 1801. *Post* equals 1 for years after 1800. [◀ Back](#)